



PINNACLE

Falls

A Renaissance Community
Tuxedo, NC

TRAIL DEVELOPMENT PLAN

Submitted by TRAIL DYNAMICS LLC

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Introduction:

Renaissance Communities LLC has contracted Trail Dynamics LLC to design, develop, and construct a complete trail system as an amenity for the residents and owners in the newly planned mountain gated community, Pinnacle Falls.

The landscape contained within Pinnacle Falls has many state park quality features. Luther Smith & Associates (landscape architects and land planners) provided the thoughtful master plan for this new development, designing in protected green space for the enjoyment of homeowners. These green spaces will provide the corridors needed to implement a wonderful trail system.

This document will provide the direction for the development of the trail system contained within Pinnacle Falls. The intent is for this information to be shared with development management staff, investors, and prospective customers for a better understanding of the process involved in creating a quality trail system.

Topography:

The landscape contained within Pinnacle Falls can be described as a large bowl valley with two high ridges and valley bottomland in between. The land sits on the escarpment dividing the mountains of North Carolina with the piedmont area of South Carolina and as such provides for dramatic long-range views from the higher elevations. The lower elevations within the development are certainly as dramatic because of a significant amount of hydrology in the form of cascading creeks and babbling brooks. The variety of topography in the landscape will provide excellent terrain for a varied trail system. High elevation trails will undulate along contours and provide view sheds of the lower elevations while highlighting the openness of hardwood forests. Trails contained within the valley and water drainages will be more intimate and enclosed, focusing on the beauty of the water features and damp cove communities.

Hydrology:

As noted above, Pinnacle Falls offers a significant amount of natural water features in the form of steep creeks, springheads, and gentle flowing streams. The primary waterway dividing the property is Cabin Creek, which contains Pinnacle Falls, from which the development derives its name. Pinnacle Falls, them selves, will become a focal point in the trail system with two separate trails leading to them providing a loop trail experience. Many other smaller waterfalls and cascades will also be highlighted in the trail system with side trails leading to meditative spots. The significant amount of hydrology on the property will provide the opportunity to highlight the grandeur of nature but will also provide challenges for trail construction in that waterways will have to be crossed in order to provide trail connections. Protection of water quality will always be a high priority during the development and subsequent use of the trail system. Buffer areas will be respected and trails will generally be outside of county and trout steam buffer areas except when crossing drainage systems. One exception to this will be the Cabin Creek Trail, which is an existing roadbed that parallels the creek. The trail system will have

numerous water crossings; smaller crossings will be simple armored crossings (to protect the native soils and prevent sediment loading) with stepping-stones (cost effective), while more significant crossings will require bridge structures (more expensive, but enhancing the user experience). A few locations may also require culvert crossings.

Geology:

There is a significant amount of geologic features to provide interest to the trail system. Most of the property is based on a large granitic dome outcrop, some of which is exposed in the higher elevations in the form of slick rock and slabs. This also shows up extensively along the Cabin Creek drainage system in that large expanses of granite slab rock that have been exposed through the erosive forces of water. The combination of water and rock forms very positive control points on a macro scale providing visual and audible sensory rewards. On a micro level, there is also a significant amount of boulders and large rocks that will serve as gateways, edge definition and trail anchors to remind us that it is as much about the journey as it is the destination. Because of a significant amount of exposed rock on the property, particularly in the higher western flanks, careful design will be needed to prevent an extensive amount of costly and unpredictable trail construction conditions.

Forest ecosystems, flora & fauna:

There are several types of forest ecosystems contained within the landscape at Pinnacle Falls. The highest elevations to the north and flanking Pinnacle Mountain Road in the area of The Meadows are relatively flat for mountain terrain and feature remnants of an old Christmas tree farm including Fraser Firs and Blue Spruce. This area will host the largest concentration of homesites.

Dropping off this higher plateau are southeast facing flanks of beautiful hardwoods (Montane Oak-Hickory Forest). The hardwood forests in Pinnacle Falls are dominated by semi-mature second-generation growth including: red oak, white oak, chestnut oak, locust and hickory. There is a mix of evergreens (white pine, yellow pine) in these areas but the landscape is certainly not dominated by these. As is typical in hardwood forest, during the growing season very little light reaches the forest floor precluding the development of under story plants. This consequent openness of the forest makes trail design and construction relatively easy allowing for flowing trails and good visual sight distance. Another benefit of a Montane Oak-Hickory Forest is an abundance and variety of interesting fauna feeding off the hard and soft mast crop including: squirrel, chipmunks, deer, wild turkey, bear, raccoons, etc. This habitat also provides shelter and food (insects, seeds, small mammals etc.) for various songbirds, woodpeckers, and birds of prey.

Another dominating forest ecosystem contained within Pinnacle Falls is Damp Cove Communities located alongside waterways and tributaries. These shady damp communities support the growth of mountain laurel, rhododendron, dog hobble, Galax, and many varieties of evergreen groundcovers, ferns, and mosses. Significant amounts of water support the growth of larger species such as the Carolina Hemlock. Specifically, there are several old growth hemlock specimens (estimate to be a couple hundred years in age) that will become interesting control points along trails. One trail will feature what we have dubbed “Hemlock Falls”, a beautiful steep creek cascade with water flowing

over a large hemlock root and having a dense canopy overhead. Efforts should be taken to protect these large specimens and other hemlocks lining the Cabin Creek corridor from the hemlock woolly adelgid infestation that is currently plaguing the east and killing our magnificent hemlock forests. These hemlocks are an important part of the ecosystem in providing year round shade thus maintaining cool temperatures in mountain streams to insure the survival of mountain trout species. Damp Cove Communities also provide shelter and needed conditions for a variety of amphibians and reptiles. Salamanders, newts, turtles, and crawfish are just a few of the inhabitants of these communities and should provide for fun exploration for youth (and adults) using the trail system.

Trail Dynamics has worked extensively in all of these types of ecosystems and is sensitive to protecting the pristine qualities of each. Trail design will highlight unique natural features while at the same time preserving the qualities and conditions that make them unique and special. The variety of ecosystems that will be accessed by the trail system within Pinnacle Falls will enhance the interest and user experience for all.

Philosophy of trail design and development:

There are a number of different philosophies and thought processes that need to be considered during the development and design phase for a functional trail system. Among the important considerations in this case are: the trail system as a marketing tool, understanding the needs and desires of the various trail users, attempting to effectively connect the different clusters of development (neighborhoods), and highlighting the unique features of the landscape.

The trail system as a marketing tool:

A well-designed and constructed trail system will serve as a powerful marketing tool for Renaissance Communities LLC to attract customers who are interested in mountain lifestyles and active outdoor recreation opportunities. Because there is a general lack of understanding of sustainable trail design and construction, having a significant portion of trail development (on the ground) will be important for a marketing launch and planned grand opening of April 15, 2005. This will help showcase the natural beauty of the landscape to prospective customers by providing access to unique features. Many of the newer mountain developments advertise "Hiking Trails" but few of these really produce anything of significance. Having good progress in the trail system before the marketing launch will also display the serious commitment of Renaissance Communities to a state park quality trail system. Property owners in Pinnacle Falls will come to view this trail system as a favorite amenity and an investment that will be enjoyed for years to come.

Understanding the needs and desires of the various trail users:

Property owners in Pinnacle Falls will likely be a variety of demographics and will include permanent as well as seasonal residents. For some, an afternoon stroll to relieve the stresses of work and day-to-day life may entail nothing more than a one-hour respite outdoors on a casual trail. For others, a lengthier half-day adventure exploring the beauty of nature through different ecosystems will require greater distance and challenge to meet their needs. There is a range of motivations for trail users including exercise, nature

study, meditation, stress release, fun, etc. All of these motivations will be taken into consideration in the design and development of the trail system in Pinnacle Falls.

Connectivity among neighborhoods:

A primary goal of the completed trail system will be to effectively connect the different clusters of development in Pinnacle Falls by trail. Providing a trail system that offers connectivity among the various neighborhoods will recall a different era in which neighbors and neighborhoods were an integral part of our lives and accessed by foot or bike instead of by automobile. The trail system can also provide a great opportunity to build a sense of community with planned outings such as spring wildflower hikes and other creative offerings.

Highlighting the landscape:

A well-designed and developed trail system will allow for an intimacy with the landscape, which cannot fully be appreciated until one travels extensively through the forest. Such a system will highlight macro features (high ridges, views, valleys, waterfalls, large rock outcroppings, etc.) as well as micro features (small cascading streams, moss covered rocks and logs, large old growth trees, etc.). Such intimacy will help us as humans develop a greater sense of the need for conservation and care for our natural world. Travels on trails will remind us that we are part of the eco-system, not apart from it.

Trail Dynamics also has some guiding principles that we bring to each and every trail project we are involved in. These include:

Sustainability: Our mantra is “Sustainable trails, by design”. We recognize that good trails start with a good design and the importance of this cannot be under-estimated. Following the design, good construction techniques must be utilized to produce the desired outcome. We believe firmly that trails should not be management nightmares for our customers. Sustainable trails should hold up to the intended uses and the daily normal challenges that Mother Nature might dole out.

Safety: We recognize that there are some inherent risks associated with providing trails for enthusiasts to recreate on in a wide range of different travel modalities. We are here to assist trail managers in identifying these risks and reducing them through an active risk-management plan. Trails cannot however be made completely “safe” and in many ways trail users are in fact seeking a sense of adventure and limited risk when they venture out into the woods. Our job as designers/builders/managers of trails is to identify and make obvious the associated risks of each trail; and provide information accordingly that will help users find the trail experience they are looking for. Our staff includes a trained risk manager with many years experience in a wide range of outdoor recreation pursuits.

Quality: At Trail Dynamics, we take quality very seriously and all too often we exceed the expectations of our customers. We have garnered a reputation for producing the

highest quality trail product possible, and we enjoy living up to that reputation. Our trail projects result in rave reviews from land managers and trail users alike.

Innovation: We take great pride in offering our customers solutions to challenging trail problems and evolving our construction techniques. Though this out of the box thinking is most important when trying to salvage poorly designed trails, we bring this sense of innovation to new trail construction projects as well.

Fun: We firmly believe that being on trails is a fun and rewarding experience that needs to be enjoyed by many. The adventure, excitement and discovery of being outdoors on a trail helps us to reconnect with our natural world and re-create ourselves as humans. The value of trails has shown to have long lasting effects to our physical and mental health. The Trail Dynamics team enjoys producing exciting trails that motivate people to get outside and enjoy life at it's fullest. We can only hope that people enjoy our trails as much as we enjoy building them.

Types of trails:

The landscape within Pinnacle Falls can support four distinctive types of trails. These include: primary singletrack trails, secondary singletrack trails, Cabin Creek doubletrack corridor, and surfaced flat trail.

Primary singletrack trails:

This type of trail will form the bulk of the trail system. They will be machine built with an average trail tread width of 40 – 45 inches and natural native soil surface for the trail tread. The majority of these will be full bench construction for sustainability. Short crib walls may have to be constructed in certain areas as necessary, but attempts will be made through initial design to minimize this to reduce costs. These trails will provide access to the various ecosystems while connecting neighborhood clusters. The intent is to allow for relatively easy hiking and potentially family oriented mountain biking. Average trail grade will be 10% or under; however, some sections may require grades of up to 20% for short distances. Design layout will entail rolling contours with frequent undulations and grade reversals to effectively shed water off of the trail tread.

Secondary singletrack trails:

These will be short spur trails leading from primary trails to significant landscape features. These may be machine or hand built and will have a more primitive feel to them as compared to primary singletrack trails. They will generally contain steeper grades and needed structures such as steps to insure sustainability.

Cabin Creek doubletrack corridor:

The Cabin Creek Trail will follow an old timber road leading from Pinnacle Falls Lane to a planned recreation area near the base of Pinnacle Falls proper. Work will require reconstruction of existing roadbed and adding needed rolling broad based grade dips to effectively shed water and protect the native soil surface from future erosion. This trail

crosses Cabin Creek and other drainages numerous times calling for rock armoring in some locations and bridges in others. The roadbed width will be maintained allowing for utility vehicle access along this corridor. This will provide for easy access during site visits for sales agents with clients and also allow for vehicle transport of those with disabilities to the planned recreation area.

Surfaced flat trail:

There are several opportunities for relatively flat trails in the development providing for easy walking opportunities. These include a flat trail circumnavigating the upper Meadows cluster as well as the lower Cabin Creek corridor at the southern boundary of the property. Development of these trails would provide for a different type of experience than those of previously described trails. Primary use would be more exercise oriented as opposed to woodland exploration. Because of the flatter nature of these potential trails, surfacing would be required to elevate the user above wet poorly draining native soils. Surfacing options include wood chips or compacted crushed stone. Despite flat and open areas these trails can actually be more expensive to build than full bench cut native soil trails on side slopes.

Warranty information:

It is always the intent of Trail Dynamics LLC to design, create, and construct trails, which are easy to maintain and manage. Long-term impacts will be minimized through sustainable design and construction best management practices. Trail Dynamics offers to Renaissance Communities an implied warranty for a time period of 3 years for trail construction including structures. This warranty covers trail tread erosional issues and the safety and structural integrity of any built trail structures. It does not cover normal maintenance related issues such as downed trees and fallen limbs, trail corridor growth, or catastrophic weather related damage (such as tornadoes, ice and snow storms, extreme high water and flood conditions).

Summary:

The landscape of Pinnacle Falls is certainly spectacular and has many state park quality features. The trail system will be developed to take full advantage of the protected open space and highlight these wonderful landscape features. Sustainability, protection of natural resources, safety, and enhancing the user experience will be the primary considerations in development and implementation of this trail system.

Respectfully submitted:

Woody Keen for Trail Dynamics LLC